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EXAMINER	
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ART UNIT	PAPER NUMBER
1638	15

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/770,693	BEER ET AL.	
	Examiner	Art Unit	
	Anne R. Kubelik	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2002 and 20 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-72* is/are pending in the application.

4a) Of the above claim(s) *11-21 and 45-55* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10, 22-44 and 56-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *with the application* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *7, 8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Applicant's election with traverse of SEQ ID NO:3 and SEQ ID NO:11 in Paper No. 14, filed 2 November 2002, is acknowledged. The traversal is on the ground(s) that the proteins encoded by SEQ ID NOs:2, 4, 6 and 8 are all hypersensitive response elicitors that have the same function and effect when used in the instant invention, and that these and other hypersensitive response elicitors fall within an art-recognized class. This is detailed in the response filed 25 April 2002, which states that hypersensitive response elicitors are glycine rich, heat stable, hydrophilic and capable of inducing a hypersensitive response in tobacco; thus, although the proteins differ from one another, because they have the same function and effect, as described in each of Bonas (1994, Trends Microbiol 2:1-2), Bonas (1994, Curr. Topics Microbiol. Immunol. 192:79-98), and Preston et al (1995, Mol Plant Microbe Interact. 8:717-732), they should not be restricted. Similarly, Applicant urges that the signal peptides, while all being different proteins, also have the same function and effect. Applicant urges that each of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14 and 16 are patented or disclosed in the literature, and cites the references. Applicant urges that they are claiming their use as a component within a chimeric gene construct.

This is not found persuasive because, as stated in MPEP 803.04, nucleotide sequences encoding different proteins are structurally distinct chemical compounds, are unrelated to each other, and constitute independent and distinct inventions. Thus, methods utilizing different nucleic acid sequences are also independent and distinct inventions.

Furthermore, the claims are not drawn to SEQ ID NOs:2, 4, 6, 8, 10, 12, 14 and 16, but to different combinations of those sequences. Thus, independent searches would need to be performed on each combination (*e.g.*, each of SEQ ID NO:4 + SEQ ID NO:10, SEQ ID NO:4 +

SEQ ID NO:12, SEQ ID NO:4 +SEQ ID NO:14, or SEQ ID NO:4 + SEQ ID NO:16). Even though each of the components is known in the prior art, each particular combination of the components requires an independent search.

It is noted that Applicant does not state that prior art regarding one combination would render the others obvious.

Secondly, Applicant urges that claims 1 and 2 are linking claims, and have not been properly handled. Examiner responds that these claims will be so treated.

Lastly, Applicant urges that they included the hypersensitive response elicitors in the application to satisfy the written description requirement, and that imposing a restriction requirement negates the breath of the claimed invention and defeats the purpose for which the sequences in the first place.

This is not found persuasive because the written description requirement has no relevance to restriction. Additionally, claims 1-2 are being treated as linking claims, and thus the breadth of the claimed invention is not negated.

The requirement, with the exception of the linking claims, is still deemed proper and is therefore made FINAL.

Claims 11-21 and 45-55 are drawn to non-elected sequences, and are thus withdrawn from consideration for being drawn to non-elected inventions. Claims 1-10, 22-44 and 56-72 are examined to the extent they read on nucleic acids encoding SEQ ID NOs:3 and 11.

2. The draftsman has approved the drawings as submitted.

3. The disclosure is objected to because it contains embedded hyperlinks and/or other forms of browser-executable code. See, *e.g.*, pg 37, line 11. Applicant is required to delete the embedded hyperlinks and/or other forms of browser-executable code. See MPEP § 608.01.

Claim Objections

4. Claims 3-4, 6, 9-10, 22-23, 30, 32-34 and 43-44 are objected to because of the following informalities:

There is an incorrect article before "amino" in claim 3, line 2, claim 9, line 3, claim 32, line 2, and claim 43, line 3; before "nucleotide" in claim 4, line 2, claim 6, line 2, claim 10, line 2, claim 33, line 2, claim 34, line 2, and claim 44, line 2; and before "chimeric" in claim 22, line 2, claim 23, line 1, claim 30, line 3, claim 57, line 2, and claim 58, line 3.

In claims 3-4, 6, 9-10, 32-34 and 43-44, all instances of "SEQ. ID. No." should be replaced with --SEQ ID NO:--.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-10, 22-44 and 56-72 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for chimeric genes comprising SEQ ID NO:3 operably linked to the *gst1* promoter, with and without a signal sequence, cells transformed with the construct, and oomycete-resistant plants transformed with the construct, does not reasonably

provide enablement for constructs encoding any hypersensitive response elicitor operably linked to any promoter that is activated by an oomycete or to fragments of the *gst1* promoter and cells and plants transformed with those constructs. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The claims are broadly drawn to a chimeric gene comprising a promoter that is activated by an oomycete, a nucleic acid encoding a hypersensitive response elicitor and a 3' regulatory region, vectors, host cells, plants and seeds comprising the chimeric gene, and a method of using it to make a plant resistant to disease from oomycete infection. Dependent claims specify that the promoter is SEQ ID NO:9 or effective fragments thereof.

The instant specification, however, only provides guidance for the cloning of PCR amplification products of the *gst1* (*prp1*) promoter (SEQ ID NO:9) from potato, comparison of the sequences of the clones to the published sequence, and construction of *gst1:uidA* constructs (example 1); *Agrobacterium*-mediated transformation of *Arabidopsis* with the constructs, inoculation of the transformed plants with *Peronospora parasitica* or *Pseudomonas syringae* pv *tomato* to show that the promoter induces expression in response to an oomycete and not to a bacteria (example 2), transformation of *Arabidopsis* with *gst1:hrpN* or *gst1*:signal sequence:*hrpN* constructs and testing of the transgenic plants for resistance to *P. parasitica*; *hrpN*, SEQ ID NO:3, is encoded by SEQ ID NO:4, which was previously isolated from *Erwinia amylovora* (example 3).

The instant specification fails to provide guidance for making or isolating "effective fragments" of the *gst1* promoter of SEQ ID NO:9.

Fragments of a DNA fragment that has promoter activity cannot predictably be assumed to also have promoter activity. Deletion analysis of various promoters have shown that even DNA segments from the portion of a promoter region containing sequence elements thought to be most important (*e.g.*, the TATA-box) need to be longer than expected. Maiti et al, in studies on a figwort mosaic virus promoter, found that smallest portion upstream of the transcriptional start site of that would support transcription was 198 basepairs long; segments of 73 and 37 basepairs did not work (1997, Transgen. Res., 6:143-156, see Fig. 4).

Identification of the functional parts of promoters is unpredictable. Chen et al (2000, Sex. Plant Reprod. 13:85-94) teach that two promoters with similar expression patterns have major differences in the expression elements required for expression in various flower parts (pg 92, right column, last two paragraphs).

The region of a given promoter that has a specific activity cannot be predicted and involves the complex interaction of different subdomains (Benfrey et al, 1990, Science 250:959-966, see Abstract, Fig. 3-5). Even a very small region may be critical for activity, and the criticality of a particular region must be determined empirically (Kim et al,1994, Plant Mol. Biol. 24:105-117, Tables 1-4, Abstract, Fig. 1-2).

Expression of hypersensitive response elicitors that are not linked to secretion signals are detrimental to plants. Li et al (2002, US Patent 6,342,654) transformed plants with constructs encoding *Pseudomonas syringae* hrmA alone and operatively linked to the PR-1b signal peptide; no plants could be obtained when the signal peptide was missing, suggesting that intracellular expression of the hypersensitive response elicitor is detrimental to the plants (column 6, line 48, to column 7, line 7). The instant specification does not teach how to overcome the problem

posed by a lack of signal sequence when expressing hypersensitive response elicitors other than hrpN.

Given the claim breath, unpredictability, and lack of guidance as discussed above, undue experimentation would have been required by one skilled in the art to develop and evaluate methods for methods of making oomycete-resistant plants by transformation with a chimeric genes comprising an effective fragment of gst1 operably linked to a nucleic acid encoding any hypersensitive response elicitor other than hrpN in the absence of a secretion signal sequence.

7. Claims 1-10, 22-44 and 56-72 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are broadly drawn to a multitude of DNA constructs comprising a nucleic acid that encodes a hypersensitive response elicitor, optionally operatively linked to a nucleic acid encoding a secretion signal protein, wherein the construct is operatively linked to a protein that induces transcription in response to activation by an oomycete.

In contrast, the specification only describes chimeric genes comprising SEQ ID NO:3 operably linked to the *gst1* promoter, with and without a signal sequence. Applicant does not describe other DNA molecules encompassed by the claims, and the structural features that distinguish all such nucleic acids from other nucleic acids are not provided.

The specification does not describe the sequence of any nucleic acids encoding hypersensitive response proteins from *E. amylovora* other than SEQ ID NO:4. The specification also does not describe the features that distinguish *E. amylovora* hypersensitive response elicitor

genes from other hypersensitive response elicitor genes. The specification also does not describe effective fragments of gst1.

Hence, Applicant has not, in fact, described the chimeric genes within the full scope of the claims, and the specification fails to provide an adequate written description of the claimed invention.

Therefore, given the lack of written description in the specification with regard to the structural and physical characteristics of the claimed compositions, it is not clear that Applicant was in possession of the genus claimed at the time this application was filed.

See *Univ. of California v. Eli Lilly*, 119 F.3d 1559, 43 USPQ 2d 1398 (Fed. Cir. 1997):

> The name cDNA is not in itself a written description of that DNA; it conveys no distinguishing information concerning its identity. While the example provides a process for obtaining human insulin-encoding cDNA, there is no further information in the patent pertaining to that cDNA's relevant structural or physical characteristics; in other words, it thus does not describe human insulin cDNA .... Accordingly, the specification does not provide a written description of the invention ....

and at pg 1406:

> a generic statement such as "vertebrate insulin cDNA" or "mammalian insulin cDNA," without more, is not an adequate written description of the genus because it does not distinguish the genus from others, except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus. A definition by function, as we have previously indicted, does not suffice to define the genus because it is only an indication of what the genes does, not what it is.

See *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ 2d 1016 at page 1021:

> A gene is a chemical compound, albeit a complex one, and ... conception of a chemical compound requires that the inventor be able to define it so as to distinguish it from other materials .... Conception does not occur unless one has a mental picture of the structure of the chemical or is able to define it by its method of preparation, its physical or chemical properties, or whatever characteristics sufficiently distinguish it. It is not sufficient to define it solely by it principal biological property, *e.g.*, encoding human erythropoietin, because an alleged conception having no more specificity than that is simply a wish to know the identity of any material with that biological property.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 6, 34 and 58-70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Dependent claims are included in all rejections.

Claims 6 and 34 are indefinite in their recitation of "effective fragments". It is unclear what the fragments are effective for.

Claim 34 lacks antecedent basis for the limitation "the *gst1* promoter" in lines 1-2.

Claim 58 is indefinite because it lacks agreement between the preamble of the methods and the positive method steps. Methods must be circular; the final step must generate the item the method is intended to produce. The method of making a plant resistant to disease resulting from oomycete infection ends in regenerating a plant from a transformed cell, when it should end in the production of a plant that is resistant to disease resulting from oomycete infection.

Claim 58 is indefinite in its recitation of "transforming under ... conditions effective to yield transcription" in line 4. It is unclear what these transformation conditions are.

Claim 59 is indefinite in its recitation of "transforming is performed under conditions effective to insert the chimeric gene into the genome of the plant cell" in lines 2-3. It is unclear what these transformation conditions are.

Claim 61 is indefinite in its recitation of "propelling particles at the plant cell" and "introducing an expression vector ... into the plant cell interior". In transformation by particle bombardment, these steps are simultaneous. It is unclear how one would separate them into two separate steps.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

11. Claims 1-2, 6-7, 22-28, 30-31, 34-36, 39-41, 56-62, 64-65, 68-70 and 72 are rejected under 35 U.S.C. 102(e) as being anticipated by Chappell et al (US Patent 5,981,843, filed May, 1995) taken with the evidence of GenBank Accession No. U12639.

Chappell et al teach chimeric genes comprising a DNA molecule encoding a hypersensitive response elicitor from *Phytophthora* (the *parA1* elicitin) and operably linked to that, an oomycete-activated promoter (the EAS4 promoter) (column 20, lines 1-52). GenBank Accession No. U12639 teaches that the pBI101 vector in which this construct was made has the 3'UTR of the nopaline synthase gene as a 3' regulatory region. Chappell et al also teach tobacco plants transformed with the construct, plant and *Agrobacterium* cells comprising the construct, and a method of using it to produce a plant with pathogen resistance (Fig. 3, and claims 14-38). These plants would be resistant to oomycetes like *Phytophthora* and *Peronospora* (column 2, lines 55-67). ParA1 elicitin inherently comprises a signal peptide (column 3, lines 34-35, and column 20, lines 12-13). The EAS4 promoter would comprise an "effective fragment" of the

gst1 promoter. Chappell et al also teach ballistic transformation of the plant cells (column 17, lines 1-9). The plants of Chappell et al are indistinguishable from plants derived from rootstock.

12. Claims 1-2, 6-7, 22-28, 30-31, 34-36, 39-41, 56-60, 62, 64-65, 68-70 and 72 are rejected under 35 U.S.C. 102(a) as being anticipated by Keller et al (1999, Plant Cell 11:223-235).

Keller et al teach chimeric genes comprising a DNA molecule encoding a hypersensitive response elicitor from *Phytophthora cryptogea* (cryptogein) and operably linked to that, an oomycete-activated promoter (the *hsr203J* promoter), the PR-1a signal sequence, and the nos terminator (paragraph spanning pg 224-225; Figures 1-2). Keller et al also teach tobacco plants transformed with the construct, plant and *Agrobacterium* cells comprising the construct, and a method of using it to produce a plant with pathogen resistance (paragraph spanning the columns, pg 225, pg 225, right column, paragraph 2, and pg 232, right column, paragraph 2). These plants are resistant to the oomycete *Phytophthora* (pg 225, right column, paragraph 2). The *hsr203J* promoter would comprise an "effective fragment" of the *gst1* promoter. The plants of Keller et al are indistinguishable from plants derived from rootstock.

13. Claims 1-2, 5-10, 22-31, 34-36, 41-44, 56-60, 62-65 and 70 are rejected under 35 U.S.C. 102(a) as being anticipated by Abdul-Kader et al (1999, Acta Hort. 489:247-250).

Abdul-Kader et al disclose apple rootstock transformed via Agrobacterium-mediated transformation with a chimeric gene comprising a nucleic acid encoding hrpN (SEQ ID NO:3) expressed from the nos promoter (pg 248-249). Abdul-Kader et al suggest transforming apple plants with constructs in which hrpN is expressed from the *gst1* promoter (pg 249, paragraph 5) and constructs in which the hrpN is expressed from a secretion signal peptide (pg 247, paragraph

3). The plants produced by Addul-Kader et al are resistant to *Venturia inaequalis* (pg 249, paragraph 4) and would inherently be resistant to oomycetes, including *Phytophthora*.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 1-10, 22-36, 41-44, 56-65 and 70-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdul-Kader et al (1999, Acta Hort. 489:247-250) in view of Pfitzner et al (1987, Nuc. Acids Res. 15:4449-4465).

The claims are drawn to chimeric genes comprising the oomycete activated promoter gst1 operably linked to a nucleic acid encoding a signal peptide, which is operably linked to a nucleic acid encoding hrpN, expression systems, cells, and plants comprising the chimeric gene and a method of making a plant resistant to disease by transformation with the chimeric gene.

The teachings of Abdul-Kader et al are discussed above. Abdul-Kader et al do not disclose constructs in which the *gst1* promoter is operably linked to a nucleic acid encoding a signal peptide, which is operably linked to a nucleic acid encoding hrpN.

Pfitzner et al teach nucleic acids encoding secretion signal peptides from PR-1a, PR-1b, and PR-1c (paragraph spanning pg 4458-4459).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the constructs used in the method of producing pathogen-resistant plants

taught by Abdul-Kader et al, to use the *gst1* promoter, as suggested by Abdul-Kader et al and to use the PR-1b signal sequence taught by Pfitzner et al. One of ordinary skill in the art would have been motivated to do so because the method of transformation would be an obvious design choice. Seeds would be obtained when the apple plants produced fruit. Alteration of the nucleic acid encoding the PR-1b secretion signal peptide so that it had a restriction site useful for making the chimeric gene would be an obvious modification.

16. Claims 1-2, 5-10, 22-31, 34-38, 41-44, 56-67 and 70-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdul-Kader et al in view of Scorza et al (1996, J. Amer. Hort. Sci. 121:616-619).

The claims are drawn to a chimeric gene comprising the oomycete activated promoter *gst1* operably linked to a nucleic acid encoding a signal peptide, which is operably linked to a nucleic acid encoding hrpN, expression systems, cells, and grape plants comprising the chimeric gene, and a method of making a grape plant resistant to disease by transformation with the chimeric gene.

Abdul-Kader et al disclose chimeric genes comprising the oomycete activated promoter gst1 operably linked to a nucleic acid encoding a signal peptide, which is operably linked to a nucleic acid encoding hrpN, expression systems, cells, and plants comprising the chimeric gene and a method of making a plant resistant to disease by transformation with the chimeric gene. Abdul-Kader et al do not disclose grape plants so transformed.

Scorza et al teach transformation of grape with a nucleic acid encoding an antimicrobial peptide or a viral coat protein by both *Agrobacterium*-mediated and particle bombardment methods (pg 618).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of making a plant resistant to disease by transformation with a chimeric gene comprising the oomycete activated promoter gst1 operably linked to a nucleic acid encoding a signal peptide, which is operably linked to a nucleic acid encoding hrpN as taught by Abdul-Kader et al in view of Pfitzner et al, to transform the construct into grape plants as described in Scorza et al. One of ordinary skill in the art would have been motivated to do so because of the economic importance of grape plants. The grape plants would produce seeds when the fruit is produced.

17. Claims 1-4, 6-7, 22-28, 30-33, 34-36, 39-41, 56-62, 64-65 and 68-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keller et al (1999, Plant Cell 11:223-235) in view of Pfitzner et al (1987, Nuc. Acids Res. 15:4449-4465).

The claims are drawn to a chimeric gene comprising an oomycete activated promoter operably linked to a nucleic acid encoding a signal peptide, which is operably linked to a nucleic acid encoding a hypersensitive response elicitor, expression systems, cells, and grape plants comprising the chimeric gene, and a method of making a grape plant resistant to disease by transformation with the chimeric gene.

The teachings of Keller et al are discussed above. Keller et al do not disclose the PR-1b secretion signal sequence in the constructs.

Pfitzner et al teach nucleic acids encoding secretion signal peptides from PR-1a, PR-1b, and PR-1c (paragraph spanning pg 4458-4459).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the constructs used in the method of producing pathogen-resistant plants

taught by Keller et al, to use the PR-1b secretion signal sequence described in Pfitzner et al. One of ordinary skill in the art would have been motivated to do so because substitution of one secretion signal sequence for another is an obvious design choice. The method of transformation would be an obvious design choice. Seeds would be obtained when the apple plants produced fruit. Alteration of the nucleic acid encoding the PR-1b secretion signal peptide so that it had a restriction site useful for making the chimeric gene would be an obvious modification.

18. Claims 1-2, 6-10, 22-28, 30-31, 34-44, 56-62 and 64-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over each of Chappell et al (US Patent 5,981,843, filed May, 1995) and Keller et al (1999, Plant Cell 11:223-235) in view of Zitter et al (US Patent 5,977,060, filed February 1997).

The claims are drawn to a chimeric gene comprising an oomycete activated promoter operably linked to a nucleic acid encoding a signal peptide, which is operably linked to a nucleic acid encoding a hypersensitive response elicitor, expression systems, cells, and grape plants comprising the chimeric gene, and a method of making a grape plant resistant to disease by transformation with the chimeric gene.

The teachings of each of Chappell et al and Keller et al are discussed above. Neither Chappell et al nor Keller et al do disclose the use of a nucleic acid encoding hrpN in the constructs.

Zitter et al teach a nucleic acid encoding hrpN and plants and seeds, including grape, transformed with hypersensitive response elicitors from *E. amylovora* (claims 32-44; SEQ ID NO:3). .

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the constructs used in the method of producing pathogen-resistant plants taught by Keller et al, to use the nucleic acid encoding hrpN described in Zitter et al. One of ordinary skill in the art would have been motivated to do so because substitution of one nucleic acid encoding a hypersensitive response elicitor for another is an obvious design choice. The method of transformation would be an obvious design choice.

Double Patenting

19. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

20. Claims 1-2, 6-10, 22-28, 30-31, 34-36, 39-44, 56-62, 64-65, 67-70 and 72 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 16 of U.S. Patent No. 6,174,717 in view of Wei et al (1998, US Patent 5,776,889) and further in view of Chappell et al (US Patent 5,981,843, filed May, 1995).

The claims are drawn to chimeric genes comprising an oomycete-activated promoter operably linked to a nucleic acid encoding hrpN, expression systems, cells, and plants

comprising the chimeric gene and a method of making a grape plant resistant to disease by transformation with the chimeric gene.

'717 claims plants transformed with a nucleic acid of the instant SEQ ID NO:4 (claim 16). '717 also teaches that SEQ ID NO:4 is to be linked to plant promoters, including those expressed in response to infection by fungi, to produce fungal-resistant plants (column 24, lines 9-22). '717 does not disclose a method of making plants resistant to oomycetes by transformation with chimeric genes comprising an oomycete-activated promoter operably linked to a nucleic acid encoding hrpN, plants and cells so obtained, and the chimeric genes used in the method.

Wei et al teach that hrpN protein protects plants from infection by *Phytophthora* (column 27, line 1, to column 28, line 24).

The teachings of Chappell et al are discussed above.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of producing hrpN-transformed plants as claimed in '717, to express the nucleic acid from an oomycete activated promoter as described in Chappell et al. One of ordinary skill in the art would have been motivated to do so because of the teachings of Wei et al that hrpN protects plants from oomycete infection and because expression of a protein only when it is needed is a common technique used in the art and suggested by Chappell et al (column 6, lines 56-63, column 2, lines 41-67).

Conclusion

21. No claim is allowed.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne R. Kubelik, whose telephone number is (703) 308-5059. The examiner can normally be reached Monday through Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached at (703) 306-3218. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Anne R. Kubelik, Ph.D.
January 27, 2003

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